Certificate Programs at the HHSDC Training Center

SAS Software Certificate

The Program

The HHSDC Training Center is offering the **SAS Software Certificate.** The program consists of a core program of four classes, plus electives to earn certificates at different levels of expertise. Students may earn the following certificate levels by completing the program requirements:

- *SAS/Analyst*
- *SAS/Expert*
- *SAS/Master*

Please see Page 2 for a complete description of the program requirements.

All SAS classes at HHSDC Training Center are taught by Destiny Corporation.

How to Obtain a Certificate

While you are on site attending the final course in your program level, notify the HHSDC Training Office that you are about to complete the program. A special certificate will be prepared and awarded to you upon completion of the final class.

Tuition Discount

When you earn a certificate, your organization will receive a 10% discount off the total tuition for all classes in that level. The total discount for a level will be taken in the final class of that level. To qualify for the discount, you must complete the first level within a 12-month period and each succeeding level within 12 months after the previous level.

HEALTH & HUMAN SERVICES DATA CENTER
HHSDC Training Center
9323 Tech Center Drive, Ste. 100
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HHSDC
California Health and Human Services Agency Data Center

SAS Software Certificate Program Description

This program consists of three tracks designed for individuals who desire a complete grounding in SAS software to perform a variety of analytical and reporting activities:

SAS/Analyst ....All core classes
SAS/Expert ....All core classes **plus** any two Expert classes
SAS/Master...............All core classes **plus** any two Expert **AND** any two Master
                                classes

SAS/Analyst Certificate (Core classes)

This track is designed to help attendees gain a complete understanding of how SAS software works and is used. Attendees will learn how to perform ad hoc analysis and reporting in standard data environments typically found within most Analyst/Researcher/Programmer positions.

- *SAS Programming I: Fundamentals of the SAS System*
- *SAS Programming II: Data Manipulation Using the Data Step*
- *SAS Programming III: Advanced Techniques*
- *SAS Report Writing: A Programming Approach*

SAS/Expert Certificate

This track is designed for individuals who wish to gain an understanding of how SAS is used to publish information and reports in different forms, including the web, PDF, Word and other environments. Large data file access is typical within the State. This track also discusses the use of SAS/SQL and the efficiencies available for processing table lookups, merges and joins against large data sources.

- *SAS: Output Delivery System (ODS) Basics*
- *SQL Processing in SAS Software*
- *SAS Programming IV: Efficiencies, Tips and Tricks*

SAS/Master Certificate

This track discusses how SAS uses a multi-threading and multi-processor environment to more efficiently process data. Macros are discussed to show how program processes can be automated, simplified and placed into production style environments for standard reporting. Database and spreadsheet access that is typical in most environments will be covered. Efficient processing in a client server environment that uses SAS under Windows, Unix and MVS will be taught to show students how to best implement a distributed processing and data environment.

- *Accessing Relational Databases and Spreadsheets Using SAS Software*
- *Client Server Processing with SAS/Connect Software*
- *Macros in SAS Software*

SAS Software Certificate Course Schedule FY 04/05

These courses may also be taken individually without working towards a certificate.
Some prerequisites apply.
If you have any questions please call us at (916) 739-7502

Course Title	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Introduction to Programming Using SAS Software				4-5					7-8			
SAS Programming I: Fundamentals of the SAS System				25-29					21-25			13-17
SAS Programming II: Data Manipulation Using the Data Step					30	-2				25-27		
SAS Programming III: Advanced Techniques									9-10			
SAS Programming IV: Optimization Tips and Techniques											26-27	
SAS Report Writing: A Programming Approach								7-9				
SQL Processing with SAS Software	Call (916) 739-7502 or write to training@hhsdc.ca.gov to be added to waiting list											
SAS: Output Delivery System (ODS) Basics	Call (916) 739-7502 or write to training@hhsdc.ca.gov to be added to waiting list											
Accessing Databases and Spreadsheets Using SAS/ACCESS	Call (916) 739-7502 or write to training@hhsdc.ca.gov to be added to waiting list											
Client/Server Processing with SAS/Connect Software	Call (916) 739-7502 or write to training@hhsdc.ca.gov to be added to waiting list											
Macros in SAS Software	Call (916) 739-7502 or write to training@hhsdc.ca.gov to be added to waiting list											

REGISTRATION INFORMATION

Satisfaction guaranteed or your money back

To enroll in a class at HHSDC, please have your training coordinator call the HHSDC Training Center Registration Line at 739-7502. We will take all enrollment and billing information over the phone, then send the training coordinator written confirmation and a map to HHSDC for each student.

Cancellations of enrolled students must be submitted in writing via e-mail to training@hhsdc.ca.gov *by the training coordinator.* To avoid charges for late cancellations, the note must be received by **TEN (10) WORKING DAYS PRIOR TO THE FIRST DAY OF CLASS**. The full course fee will be charged for any cancellations received after the 10-working day deadline. Verbal cancellation notifications will not be accepted. Substitutions may be made at any time via telephone call.

The HHSDC Training Center is located at 9323 Tech Center Drive, Suite 100, in Sacramento. Tech Center Drive is located one block south of the intersection of Folsom Blvd. and Mayhew Road, between Bradshaw and Watt. **The class will be in session each day from 8:15 A.M. to approximately 4:30 P.M.** Plenty of free parking is available.

Tuition shown is before discount.

Introduction to Programming Using SAS Software
– This 2-day course is designed for non-programmers who need to gain familiarity with SAS programming in their work environment. Individuals with no prior programming background or SAS knowledge are candidates for this course. It is a recommended prerequisite to *SAS Programming I: Fundamentals of the SAS System.* This course discusses the basics of programming. It introduces fundamental SAS programming concepts and shows how to apply them to common business issues. This course covers operating systems fundamentals, SAS in the Display Manager environment, how SAS works with different file types, and how to create, execute, and debug SAS code. **$600 per student.**

SAS Programming I: Fundamentals of the SAS System
– This 5-day course is designed for individuals who need to obtain a complete understanding of SAS Software under their operating system environment. This is designed to help attendees start programming in SAS. Using Base SAS and SAS/GRAPH software, students will learn to read flat file and SAS data, organize, summarize and report on it. This course highlights the features in Version 8, however the majority of the content is relevant to any release of SAS software and operating system. **$1,125 per student.**

SAS Programming II: Data Manipulation Using the Data Step
– This 3-day course is designed for SAS programmers who need a more in-depth understanding of the Data Step. This course focuses on how to manage SAS data, work with different data types, manipulate data, and create various reports. It also provides the tools for programmers to perform various data transformations and summarizations, and read several types of data sources. **$725 per student.**

SAS Programming III: Advanced Techniques
– This 2-day course is designed to show SAS programmers how to use the data step to read and manipulate complex forms of data, and how to use SAS utilities to manage SAS libraries. **$600 per student.**

SAS Programming IV: Optimization Tips and Techniques
– Working efficiently in SAS is crucial, especially when processing large files or information on resource or technology deprived computers. In this 2-day course, students will learn techniques to reduce program execution time and unnecessary use of resources. Merging many data files has always been a resource burden. We examine all the different ways of pulling data together without using merge processing. We found other techniques save coding and processing time, while being easy to use. We discuss how indexes help speed up searching through data. The class also covers how to give different views of the same data to different users, without giving them code. Coding for the end user becomes much simpler. We teach how to improve the performance and efficiency of your SAS programs. This course is designed for experienced SAS programmers to enhance existing skills. Efficient SAS programming methods and techniques are studied in depth. **$600 per student.**

SQL Processing with SAS Software
– This 2-day course is designed for people who need to write a small amount of SQL code to ask questions of their data. This course will teach attendees how to use PROC SQL to retrieve information from their data. This is an alternative to traditional Data Step, Sort, Summary, and Merge processing in SAS. Most of these processes can be achieved with this single procedure. Students also find if they can code less, then there is less of a chance for syntax errors. Structured Query Language is also the basis of querying relational databases such as DB2, Oracle, SQL Server and Sybase. This course does not teach how to read specific databases. See the course, Accessing Relational Databases and Spreadsheets with SAS/Access Software, for these topics. **$600 per student.**

SAS Report Writing: A Programming Approach
– This 3-day course shows the most popular types of reports SAS can create. Students will learn how to create many types of what-if style reports and exactly the report wanted. There is even a procedure that allows you to create reports without writing the code. This course covers report writing techniques including Proc Print, Proc Tabulate, Proc Report, Proc Means, Proc Summary and the creation of data step reports. Most forms of reporting available in a programming environment are covered. **$725 per student.**

Accessing Databases and Spreadsheets with SAS/ACCESS – This 1-day course is designed to teach students how to get data out of DB2, Oracle, SQL Server, Sybase, dbf files, spreadsheets, DIF files and more. Topics will be tailored based on student needs. Data can be pulled into SAS from these systems for analysis. We also cover how to load data, after it has been analyzed, back into these databases and spreadsheets. This class covers the optimization techniques available with SAS, SQL and external databases, but does not teach how to write SQL. See the SQL course to learn more about SQL. We teach complete and transparent access to all of your data. This course focuses on using the SAS/ACCESS technique of reading and writing data from relational database management systems and external third party software. Efficiency techniques for optimizing data, access performance and how to create new database tables will also be discussed. **$325 per student.**

Client/Server Processing with SAS/CONNECT – This 2-day course is designed to teach users how to connect to multiple platforms supporting SAS, move data between them, and process on the most appropriate system. Concurrent use of data and access to data not stored in SAS is discussed. **$600 per student.**

SAS Output Delivery System (ODS) Basics – This 1-day course is designed to show how the Output Delivery System has changed the way information is output in the SAS System. This is designed for everyone who uses SAS Version 8 and forward. **$325 per student.**

Macros in SAS Software – This 3-day course is designed for the experienced SAS user. You will learn the theory and methods of SAS Macro programming and how to apply them to common problems. Creating simpler and more efficient SAS code is addressed. Quite often programs are re-run with minor changes. This promotes multiple copies of the same code. We show how to avoid copying programs used many times for processing and how to create a generic version of the code for future processing. Large programs can be reduced to single lines. Managing of processes is much easier. We discuss the creation of routines in SAS. Other people can use routines created, using macros without having to re-code from scratch. **$725 per student.**